ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITE REMEDIATION AND STORAGE TANK PROGRAMS

Guidance No. CS/STP 01- 01 April 27, 2001

USE OF 10X RULE AND RISK ASSESSMENTS TO DEVELOP GROUNDWATER CLEANUP LEVELS

PURPOSE:

This policy describes the application of 18 AAC 75, Article 3 and 18 AAC 78, Article 6 for approving a groundwater cleanup level developed using the 10X Rule or a department-approved risk assessment.

BACKGROUND:

Three options are provided in 18 AAC 75. 345 (b) for establishing a groundwater cleanup level.

1. Contaminated groundwater must meet the Table C cleanup levels if the current or reasonable expected future use of groundwater, as determined under 18 AAC 75.350, is a drinking water source.

2. The department may establish a groundwater cleanup level equal to 10 times the Table C cleanup level (10X Rule) if the department determines in consultation with specified parties that the groundwater, as determined under 18 AAC 75.350, is not a current or reasonably expected future drinking water source. The Table C cleanup levels must be met at the property boundary in an area where the current or reasonably expected potential future use of groundwater in the neighboring property is a drinking water source, unless an alternate point of compliance is approved.

3. Under 18 AAC 75.345(b)(3), the department may approve groundwater cleanup levels based on an approved risk assessment conducted in accordance with the department's *Risk Assessment Procedures Manual*, dated June 8, 2000, incorporated by reference into regulation. If a risk assessment indicates that exposure to contamination results in unacceptable risk to human health or the environment, alternative cleanup levels may be proposed that reduce the risk to acceptable risk management levels established under 18 AAC 75.325(h) or 18 AAC 78.600(e). Risk management involves an evaluation of the results of a risk assessment in conjunction with overlying regulatory requirements in making cleanup decisions at a contaminated site.

The groundwater and surface water cleanup regulations also identify cases that provide for more stringent cleanup levels than those listed above in site specific cases.

This guidance document describes the decision process that applies to the development of groundwater cleanup levels based on the implementation of the 10X Rule or site-specific risk assessments. The document also identifies applicable criteria for the cleanup of a contaminated

site where a groundwater cleanup level is developed based on the 10X Rule or a site-specific risk assessment.

APPLICABILITY/ACTION:

The attached guidance applies to all Division of Spill Prevention and Response (SPAR) staff involved in approving groundwater clean up levels using the 10X Rule or a department-approved risk assessment. The regulations at 18 AAC 75, Article 3 or 18 AAC 78 govern where a conflict arises between this guidance document and the regulations.

GUIDANCE:

Regulations under 18 AAC 75, Article 3, and referenced in 18 AAC 78.620, provide the requirements for cleaning up groundwater contaminated by hazardous substances. Cleanup levels are based on actual and potential groundwater use. If groundwater is a current or reasonably expected future source of drinking water, then Table C cleanup levels apply throughout the contaminant plume. For contaminants not listed in Table C, the appropriate groundwater cleanup level for potable groundwater is a federal Maximum Contaminant Level (MCL). If one does not exist, then the appropriate cleanup level is a calculated level protective of drinking water use of the groundwater under a residential land use scenario using department approved toxicity data and Equations 1 and 2 of the department's *Guidance on Cleanup Standards Levels and Input Parameters* dated July 28, 1999, incorporated by reference into regulation. For the purposes of this document, Table C cleanup levels, federal MCLs, and approved risk-based cleanup levels protective for use of the groundwater as a drinking water source under a residential land use scenario are collectively termed in this document ***"applicable cleanup levels."*** If the department determines in consultation with each site landowner, the public, and appropriate government officials, that the groundwater is not a current or a reasonably expected potential future source of drinking water based on an evaluation of the factors in 18 AAC 75.350, then 10 times the applicable groundwater cleanup level applies throughout the contaminant plume.

A site specific risk assessment may also be used as the basis for developing site-specific groundwater cleanup levels. The risk assessment provides the basis for determining whether impacted media at a site require cleanup to protect human health and the environment under specific land use and site conditions.

In all cases, the department will consult with each landowner, the public and applicable government officials in making a determination whether the groundwater is considered not a current or future drinking water source.

Use of 10X Rule for Approved Site-Specific Cleanup Levels

If a site-specific analysis under 18 AAC 75.350 indicates there is no exposure to groundwater because groundwater is determined by the department to not be a current or potential drinking water source, then the applicable groundwater cleanup level is 10 times the cleanup levels in Table C, for each contaminant, as required under 18 AAC 75.345(b)(2). However, project managers must consider whether a risk assessment is necessary to evaluate other exposure pathways, such as volatilization of contaminants into structures, and impacts to ecological receptors. If the 10X Rule is not protective of other exposure pathways than determining a cleanup level using a risk assessment is appropriate.

If site-specific cleanup levels based upon the 10X Rule are developed for groundwater that is not a current or potential drinking water source, then approval of the 10X Table C cleanup levels will require the following:

- free product will be recovered in accordance with 18 AAC 75.325(f)(B) or 18 AAC 78.240(b)(2);
- where groundwater is closely hydrologically connected to surface water, water quality standards in 18 AAC 70 will be met for surface water and sediment;
- each proposed site-specific cleanup level does not exceed 10 times the cleanup levels in Table C on the property. Table C cleanup levels apply off the property unless the department has also approved 10X Table C levels for those properties;
- the site risk will not exceed the department's cumulative risk management levels for human health or ecological receptors;
- applicable institutional controls as required by 18 AAC 75.375 (a) will be implemented.

Upon approval of the site-specific 10 X Rule cleanup levels, a plan for conducting a cleanup of the groundwater shall be submitted to the department for approval as required by 18 AAC 75.360, when groundwater cleanup levels are exceeded.

For groundwater where 10 times the residential groundwater cleanup level is the applicable cleanup level, a No Further Remedial Action Planned (NFRAP) letter will be issued for the groundwater contamination at the site, indicating that active remediation is no longer required, when the following requirements under 18 AAC 75.380(c)(2) or 18 AAC 78.276(e)(2) have been met:

- the maximum concentration of each groundwater contaminant, as confirmed by periodic sampling, is at or below 10 times the cleanup level in Table C;
- the size of the contaminant plume is steady-state or shrinking;
- a trend of reducing contaminant concentrations has been established;
- water quality standards have been met in contaminated surface water and sediment where contaminated groundwater is closely hydrologically connected to surface water; and
- Institutional controls for the groundwater if required by 18 AAC 75.375 (a) have been established.

The department will issue a Site Closure letter for groundwater contamination at the site when:

- contaminated groundwater has reached 10 times the cleanup levels in Table C, as confirmed by periodic sampling; and
- soil has reached levels considered protective of residential use of the site; and
- long term monitoring and institutional controls are no longer required.

Use of Risk Assessment for Approved Site-Specific Cleanup Levels

If a risk assessment is conducted to demonstrate that cleanup of groundwater is not necessary based on proposed risk-based cleanup levels, approval of the risk-based cleanup levels will require the following:

- free product will be recovered in accordance with 18 AAC 75.325(f)(B) or 18 AAC 78.240(b)(2);
- there will be no adverse impacts to human health or to the environment from potential

exposure to groundwater contamination;

- the site risk will not exceed the department's cumulative risk management levels for human health or ecological receptors.
- where groundwater is closely hydrologically connected to surface water, water quality standards in 18 AAC 70 will be met for surface water and sediment;
- potential plume migration has been evaluated in the site characterization and risk assessment; and
- applicable institutional controls as required by 18 AAC 75.375(a) will be implemented.

For sites where the department has approved site-specific risk-based groundwater cleanup levels for groundwater which is not a current or potential drinking water source, a NFRAP letter will be issued for the groundwater contamination at a site indicating that active remediation of the groundwater is no longer required when the following requirements under 18 AAC 75.380(c)(2) or 18 AAC 78.276(e)(2) have been met:

- the maximum concentration of each groundwater contaminant, based on sufficient periodic sampling is at or below the site-specific risk-based cleanup level(s);
- the size of the contaminant plume is steady-state or shrinking;
- a trend of reducing contaminant concentrations has been established;
- water quality standards have been met in contaminated surface water and sediment where contaminated groundwater is closely hydrologically connected to surface water; and
- institutional controls for the groundwater as required by 18 AAC 75.375 (a) have been established.

The department will issue a Site Closure letter for groundwater contamination at the site when:

- contaminated groundwater has reached applicable groundwater cleanup levels as confirmed by periodic sampling;
- soil has reached levels considered protective of residential use of the site; and
- long term monitoring and institutional controls are no longer required.

Terms used in this document, unless defined otherwise, have the meaning given in 18 AAC 75.990.

APPROVAL:

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Date

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